

## REMARKS

In the Office Action mailed January 25, 2008, the Examiner (1) rejected claims 24, 34, 35, 37, 43, and 45 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,658,033 (Andersson) and (2) rejected claims 25-33, 36, 38-42, and 44 under 35 U.S.C. § 103(a) as being unpatentable over Andersson in view of U.S. Patent No. 4,835,779 (Liou).

### 1. Status of the Claims

Currently pending are claims 24-45, of which claims 24, 35, 37, 43, 44, and 45 are independent, and the remainder are dependent.

### 2. Response to 35 U.S.C. § 102(b) Rejection

As noted above, the Examiner rejected claims 24, 34, 35, 37, 43, and 45 under 35 U.S.C. § 102(b) as being anticipated by Andersson. Under M.P.E.P. § 2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently, in a single prior art reference. Applicant respectfully submits that these claims are not anticipated by Andersson.

#### A. Claims 24, 34, and 37

At the least, Andersson does not teach or suggest increasing the second controlled current/voltage by a step before obtaining a second set of measurement values by decreasing the first control current/voltage in a negative direction, as disclosed by claim 24.

Claim 24 discloses a method of obtaining a measurement plane from a multi-section tunable laser diode. The method comprises (a) obtaining a first set of measurement values for an output of the laser diode by increasing a first current/voltage through a range of values in a positive direction; (b) increasing a second control current/voltage by a step; (c) obtaining a second set of measurement values for the output of the laser diode by decreasing the first control current/voltage through a range of values in a negative direction; (d) increasing a second control

current/voltage by a step; (e) repeating steps (a) - (d) until a sufficient range of the second control current/voltage has been used; and (f) identifying, in a resultant data set, regions of hysteresis.

Andersson, on the other hand, teaches a method of measurement that holds the second control current constant while sweeping the first control current up and down. In Andersson, the second control current is not increased by a step until after an up/down sweep of the first control current is complete. (col. 4, lines 13-18, "A Sampled Grating DBR laser ... can be measured ... by allowing the current in respective reflector sections to sweep while supplying one of said reflector sections with a constant current in order to map the hysteresis regions for different phase currents.") Thus, Andersson is unable to capture discontinuities other than hysteresis, such as cavity mode jumps and other such effects.

Of importance, claim 24 involves sweeping the first current up (i.e. obtaining the first set of measurement values ... by increasing the first control current ... in a positive direction), then increasing the second control current by a step before the first current is swept down (i.e. before obtaining the second set of measurement values ... by decreasing the first control current ... in a negative direction). The advantages of this step over Andersson may be significant. For example, many types of discontinuities may be captured beyond just hysteresis, including mode jumps and/or other effects. In addition, this step may help avoid duplication of current sweep. Further, the measurement may be less susceptible to noise as opposed to the teachings of Andersson.

Since Andersson subtracts to sweep along identical paths, (one up and one down), the signal level of each sweep is the same, except in the region of hysteresis, so that the accuracy in measuring the hysteresis is limited by the signal to noise ratio in each sweep. On the other hand, by scanning in the way claimed by the present Claim 24, the up and down paths, and thus the signal levels of each sweep, are not necessarily identical. This may increase the signal level, thereby increasing the signal to noise ratio and reducing the effects of noise, whilst increasing measurement accuracy.

For at least the foregoing reasons, Applicant submits that Andersson does not anticipate claim 24.

Further, for at least the same reasons that Andersson does not anticipate claim 24, Applicant submits that Andersson does not anticipate claim 37. Claim 37 recites a means for increasing a second control current by a step after obtaining the first set of measurement values. As discussed, Andersson does not teach or suggest such features.

Because Andersson does not teach each and every element of independent claims 24 and 37, Applicant submits that Andersson fails to anticipate claims 24 and 37. Applicant also submits that claim 34 is allowable for at least the reason that it depends from an allowable base claim 24. Therefore, Applicant respectfully requests that the § 102 rejections in regard to claims 24, 34, and 37 be withdrawn.

**B. Claims 35, 43, and 45**

At the least, Andersson does not teach or suggest obtaining a first set of measurement values for the output of the laser diode by increasing a first control current through a range of values in a positive direction and decreasing a second control current in a negative direction at the same time, as disclosed by claim 35.

Claim 35 discloses a method of obtaining a measurement plane from a multi-section tunable laser. The method comprises: (a) obtaining a first set of measurement values for the output of the laser diode by increasing a first control current through a range of values in a positive direction and decreasing a second control current in a negative direction at the same time; (b) increasing one of the first or second control currents by a step; (c) obtaining a second set of measurement values for the output of the laser diode by increasing the second control current through a range of values in a positive direction and decreasing a first control current in a negative direction at the same time;

and (d) repeating steps (a) - (c) until a sufficient range of the first and the second control current has been used, wherein total control currents to the laser are changing at a continuous rate.

Andersson does not teach or suggest that the first current is increased while the second current is decreased at the same time (i.e. obtaining a first set of measurement values ... by increasing a first control current ... and decreasing a second control current ... at the same time). As discussed above, Andersson discloses holding one control current constant, while the other control current is swept up and down. Therefore, Andersson does not teach or suggest the method of claim 35.

Further, for at least the same reasons that Andersson does not anticipate claim 35, Applicant submits that Andersson does not anticipate claims 43 and 45. Claim 43 recites a means for obtaining a first set of measurement values for an output of the laser diode by increasing a first control current through a range of values in a positive direction and decreasing a second control current in a negative direction at the same time. Similarly, claim 45 recites a current source control for obtaining a first set of measurement values for an output of the laser diode by increasing a first control current through a range of values in a positive direction and decreasing a second control current in a negative direction at the same time. As discussed, Andersson does not teach or suggest such features.

Because Andersson does not teach each and every element of independent claims 35, 43, and 45, Applicant submits that Andersson fails to anticipate claims 35, 43, and 45. Therefore, Applicant respectfully requests that the § 102 rejections in regard to claims 35, 43, and 45 be withdrawn.

### **3. Response to the 35 U.S.C. § 103(a) Rejection**

As noted above, the Examiner rejected claims 25-33, 36, 38-42, and 44 under 35 U.S.C. § 103(a) as being unpatentable over Andersson in view of Liou. Applicant respectfully submits that the

combination of Andersson and Liou does not render claims 25-33, 36, 38-42, and 44 obvious under § 103.

Liou discloses a method and apparatus for producing laser pulses at two wavelengths alternately by switching the oscillations of a distributed feedback semiconductor laser of the continuous grating type back and forth across the stop band. (Abstract) Nothing in Liou teaches or suggests (i) stepping up a second control current while in between the up-sweep and down-sweep of the first current or (ii) increasing the first current while the second current is decreased at the same time. Thus, for the reasons discussed in regards to claims 24, 34, 35, 37, 43, and 45, Liou does not overcome the deficiencies of Andersson.

Further, claim 44 recites an increment function for increasing a second control current by a step after obtaining the first set of measurement values but before obtaining the second set of measurement values. As discussed, Andersson does not teach or suggest such features.

Therefore, for at least the foregoing reasons, Applicant submits that claims 25-33, 36, 38-42, and 44 are new, non-obvious, and allowable. Applicant also submits that claims 25-33, 36, and 38-42 are allowable for the reason that each depends from an allowable base claim. Accordingly, Applicant respectfully requests that the § 103(a) rejections of claims 25-33, 36, 38-42, and 44 be withdrawn.

#### **4. Conclusion**

For the foregoing reasons, Applicant submits that all of the pending claims are now in condition for allowance, and thus Applicant respectfully requests notice to that effect. Should the Examiner wish to discuss any aspect of this application, the Examiner is welcome to call the undersigned at (312) 913-3341.

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